SCIENTIFIC MANPOWER PROBLEMS

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(Summary)

There has been a great deal of discussion during recent years of the problems arising from the shortage of scientists and engineers. This is a serious problem but unfortunately it is also a complex one. Hence there is confusion, both as to the facts and as to the remedies. It is desirable, therefore, to be clear about what factors are affecting the demand for scientists and engineers; what factors are influencing the supply; which of these various factors are long- and which are short-term in nature and finally which remedies should be considered for the short-term or the long-term problem.

The demand for scientists and engineers is affected by the following factors:

1. A long-term rise in the percentage of scientists and engineers in the population required by an advancing industrial society. Over the long term this demand is growing and is growing in an ever-increasing rate.

2. Because of the complex nature of many of the institutions and agencies which operate in a complex industrial society (large universities, large industries and large government agencies, including military agencies) scientists and engineers are being called more and more into positions of direction and management of such institutions or agencies.

3. Because of the general nature of the current world situation there appears to be, over a substantial period of years in the future, a necessity for a high level of research and development directed toward military problems.

4. Finally, the unusually large spurt in military activity since 1950 has resulted in a large and to some extent temporary bulge in the demand for scientific and technical personnel.

The following are some of the factors which affect the supply of new scientists and engineers:

1. There has been a long-term, steady increase in the numbers of young men and women going in to science and engineering. This rate of growth in recent years has been, however, less than the rate of growth of the demand.

2. During the last 30 years there has been a reduction in emphasis in high schools on mathematics and the physical sciences which has held down the growth in numbers of students prepared to enter these fields in college.

3. The veteran program following World War II resulted in a very large but very temporary increase in number of students in the engineering field, an increase which disappeared sharply in 1950-51.

4. The number of students now entering college is at a temporary low point because of the low birth rate of the 1930s. These numbers will slowly increase over the next ten years.

5. The requirements of military service have withdrawn substantial numbers of young men from the field during or following their period of education.

The measures which may be taken to remedy this situation, among others, are the following:

A. Measures which will take immediate effect:

   1. Make sure that each scientist or engineer in education, industry and the military is being used to the maximum effectiveness consistent with his training and ability.

   2. Provide the maximum in subprofessional assistance and in research, development or engineering facilities to each scientist or engineer to increase his effectiveness.

   3. Adjust salary scales, particularly for the older scientists and engineers, to prevent their being attracted into nontechnical positions.

B. For the medium term (2 to 4 years)

   1. Give subprofessional training at high school or junior college levels to more young men

and women to serve as draftsmen, technicians, etc. to relieve scientists and engineers of routine labors.

2. Stop the drafting or calling up as reserve officiers those with scientific and engineering training.

3. Examine the use of scientists and engineers in the military services and adopt methods for using them more effectively.

C. For the long term:

1. Attract more able young men and women at the high-school level into the scientific and engineering field. This can be done by

   (a) better counseling at the high-school level,

   (b) providing further information on the opportunities in engineering to high-school students,

   (c) increasing salary scales to make careers in science and engineering more attractive.

2. Educate the public to recognize the contributions of science and engineering to modern society, to the welfare of people, as well as to their security, and thus increase the prestige of the scientist and engineer and improve the public's understanding of the value of his efforts.